

## CLAIMS

What is claimed is:

- 1 1. A method for performing a database operation, comprising the computer-  
2 implemented steps of:  
3 receiving a database query that specifies an operation for manipulating data;  
4 in response to receiving said database query, performing the steps of,  
5 retrieving data from a relational structure;  
6 storing the data in a non-relational structure that can be addressed as a  
7 multi-dimensional array; and  
8 performing said operation specified in the database query on said data.
- 1 2. The method of Claim 1, wherein the step of storing the data in a structure  
2 comprises the step of storing the data in a structure that can be symbolically  
3 addressed as an n-dimensional array.
- 1 3. The method of Claim 1, further comprising the step of presenting in tabular format  
2 results from performing said operation.
- 1 4. The method of Claim 1, wherein the step of performing said operation comprises  
2 the step of automatically reordering the specified operations to allow the operation  
3 to be correctly performed on said data stored in said non-relational structure.
- 1 5. The method of Claim 1, wherein the step of performing said operation comprises  
2 the step of aggregating over a set of data information contained in multiple cells of  
3 said non-relational structure.
- 1 6. The method of Claim 1, wherein the step of performing said operation comprises  
2 the step of repeatedly performing a series of manipulations on said data until a  
3 particular criterion is satisfied.

1 7. A method for processing database query operations, comprising the computer-  
2 implemented steps of:  
3 in response to receiving a database query that specifies an operation for  
4 manipulating data, performing the steps of,  
5 referencing data in a relational structure as if the data was stored in a  
6 multi-dimensional array;  
7 retrieving the data from said relational structure; and  
8 performing said operation previously specified in said database query.

1 8. The method of Claim 7, wherein:  
2 the step of receiving a database query that specifies an operation comprises the  
3 step of receiving a multi-dimensional array operation; and  
4 the step of referencing data in a relational structure comprises the step of  
5 referencing said data using said multi-dimensional array operation.

1 9. The method of Claim 7, wherein the step of retrieving the data comprises the step  
2 of retrieving the data from one or more relational database tables.

1 10. The method of Claim 7, further comprising the step of storing said data in a non-  
2 relational structure; and  
3 wherein the step of performing said operation comprises the step of performing  
4 said operation in reference to said data stored in said non-relational  
5 structure.

1 11. The method of Claim 7, wherein the step of performing said operation comprises  
2 the step of repeatedly performing a series of manipulations on said data until a  
3 particular criteria is satisfied.

- 1 12. A method for processing database query operations, comprising the computer-  
2 implemented steps of:  
3 in response to receiving a database query that specifies an operation for  
4 manipulating data, performing the steps of,  
5 retrieving a first set of data from a first relational structure;  
6 storing the first set of data in a non-relational structure; and  
7 manipulating the first set of data by performing the operation previously  
8 specified in the database query.
- 1 13. The method of Claim 12, wherein the step of retrieving a first set of data from a  
2 first relational structure comprises the step of retrieving said first set of data from  
3 a relational database.
- 1 14. The method of Claim 13, wherein the step of retrieving said first set of data from a  
2 relational database comprises the step of retrieving said first set of data from one  
3 or more tables within said a relational database.
- 1 15. The method of Claim 12, wherein the step of storing the first set of data in a non-  
2 relational structure comprises the step of storing the first set of data within a  
3 spreadsheet application.
- 1 16. The method of Claim 12, wherein the step of storing the first set of data in a non-  
2 relational structure comprises the step of storing the first set of data in a non-  
3 relational database application.
- 1 17. The method of Claim 12, wherein the step of storing the first set of data in a non-  
2 relational structure comprises the step of storing the first set of data within an n-  
3 dimensional array data structure.

- 1 18. The method of Claim 12, wherein the step of manipulating the first set of data  
2 comprises the steps of symbolically addressing the first set of data as n-  
3 dimensional array information.
- 1 19. The method of Claim 12, further comprising the step of, after performing the step  
2 of manipulating the first set of data, storing in a second relational structure, result  
3 information based on performance of said operation.
- 1 20. The method of Claim 12, wherein the step of manipulating the first set of data  
2 comprises the step of repeatedly performing a series of manipulations on said first  
3 set of data until a particular criteria is satisfied.
- 1 21. A computer-readable medium carrying one or more sequences of instructions for  
2 performing a database operation, wherein execution of the one or more sequences  
3 of instructions by one or more processors causes the one or more processors to  
4 perform the steps of:  
5 receiving a database query that specifies an operation for manipulating data;  
6 in response to receiving said database query, performing the steps of,  
7 retrieving data from a relational structure;  
8 storing the data in a non-relational structure that can be addressed as a  
9 multi-dimensional array; and  
10 performing said operation specified in the database query on said data.
- 1 22. The computer-readable medium of Claim 21, wherein the step of storing the data  
2 in a structure comprises the step of storing the data in a structure that can be  
3 symbolically addressed as an n-dimensional array.

1 23. The computer-readable medium of Claim 21, further comprising instructions for  
2 performing the step of presenting in tabular format results from performing said  
3 operation.

1 24. The computer-readable medium of Claim 21, wherein the step of performing said  
2 operation comprises the step of automatically reordering the specified operations  
3 to allow the operation to be correctly performed on said data stored in said non-  
4 relational structure.

1 25. The computer-readable medium of Claim 21, wherein the step of performing said  
2 operation comprises the step of aggregating over a set of data information  
3 contained in multiple cells of said non-relational structure.

1 26. The computer-readable medium of Claim 21, wherein the step of performing said  
2 operation comprises the step of repeatedly performing a series of manipulations on  
3 said data until a particular criterion is satisfied.

1 27. A computer-readable medium carrying one or more sequences of instructions for  
2 processing database query operations, wherein execution of the one or more  
3 sequences of instructions by one or more processors causes the one or more  
4 processors to perform the steps of:  
5 in response to receiving a database query that specifies an operation for  
6 manipulating data, performing the steps of,  
7 referencing data in a relational structure as if the data was stored in a  
8 multi-dimensional array;  
9 retrieving the data from said relational structure; and  
10 performing said operation previously specified in said database query.

1 28. The computer-readable medium of Claim 27, wherein:  
2 the step of receiving a database query that specifies an operation comprises the  
3 step of receiving a multi-dimensional array operation; and  
4 the step of referencing data in a relational structure comprises the step of  
5 referencing said data using said multi-dimensional array operation.

1 29. The computer-readable medium of Claim 27, wherein the step of retrieving the  
2 data comprises the step of retrieving the data from one or more relational database  
3 tables.

1 30. The computer-readable medium of Claim 27, further comprising instructions for  
2 performing the step of storing said data in a non-relational structure; and  
3 wherein the step of performing said operation comprises the step of performing  
4 said operation in reference to said data stored in said non-relational  
5 structure.

1 31. The computer-readable medium of Claim 27, wherein the step of performing said  
2 operation comprises the step of repeatedly performing a series of manipulations on  
3 said data until a particular criteria is satisfied.

1 32. A computer-readable medium carrying one or more sequences of instructions for  
2 processing database query operations, wherein execution of the one or more  
3 sequences of instructions by one or more processors causes the one or more  
4 processors to perform the steps of:  
5 in response to receiving a database query that specifies an operation for  
6 manipulating data, performing the steps of,  
7 retrieving a first set of data from a first relational structure;  
8 storing the first set of data in a non-relational structure; and  
9 manipulating the first set of data by performing the operation previously  
10 specified in the database query.

- 1 33. The computer-readable medium of Claim 32, wherein the step of retrieving a first  
2 set of data from a first relational structure comprises the step of retrieving said  
3 first set of data from a relational database.
- 1 34. The computer-readable medium of Claim 33, wherein the step of retrieving said  
2 first set of data from a relational database comprises the step of retrieving said first  
3 set of data from one or more tables within said a relational database.
- 1 35. The computer-readable medium of Claim 32, wherein the step of storing the first  
2 set of data in a non-relational structure comprises the step of storing the first set of  
3 data within a spreadsheet application.
- 1 36. The computer-readable medium of Claim 32, wherein the step of storing the first  
2 set of data in a non-relational structure comprises the step of storing the first set of  
3 data in a non-relational database application.
- 1 37. The computer-readable medium of Claim 32, wherein the step of storing the first  
2 set of data in a non-relational structure comprises the step of storing the first set of  
3 data within an n-dimensional array data structure.
- 1 38. The computer-readable medium of Claim 32, wherein the step of manipulating the  
2 first set of data comprises the steps of symbolically addressing the first set of data  
3 as n-dimensional array information.
- 1 39. The computer-readable medium of Claim 32, further comprising instructions for  
2 performing the step of, after performing the step of manipulating the first set of  
3 data, storing in a second relational structure, result information based on  
4 performance of said operation.

- 1 40. The computer-readable medium of Claim 32, wherein the step of  
2 manipulating the first set of data comprises the step of repeatedly  
3 performing a series of manipulations on said first set of data until a  
4 particular criteria is satisfied.

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